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Post-War Education—I. Where Are We Now?

An enlarged picture of education will follow war victory by the Allied Nations. The reason for that extension of education is fundamental in democracy. We should try to see what this enlarged view may mean to ourselves, to those who live within our allied countries, and possibly to peoples within the enemy countries.

The privilege of being educated is one of the often announced benefits to citizens of our democracy. Presidents Washington and Jefferson were quite positive on this point, and their associated "Founding Fathers" constantly sought to provide guarantees of that privilege. Though not yet fully realized in the United States, we have steadily moved toward a time when each person, if he chooses to do so, may claim his privilege of becoming educated. Universal education is our goal, and the goal is less distant as the decades pass. The clouds of racial strife, of inadequate funds, or of bad political management sometimes obscure our progress for a time, but almost universal educational opportunity is now a fact. This does not mean that we are satisfied with the achievements of education but that its improving achievements are available to those who will work for them.

Time was when the classroom was only for children and their teachers. Slowly but surely the idea was gained that the best educated individuals never finish their education. First, school teachers were asked and helped to attend summer schools, to travel, to take long leaves from teaching, but best of all to keep being educated while teaching, thus making their regular vocation the vital factor in their continued education. This was good for the teacher and for those whom they taught, and especially was good for those who taught the teachers. This writer was once dean of a college which used members of a university faculty to give courses of instruction in late afternoons, evenings, and on Saturdays. The students in this college were regularly employed teachers, lawyers, doctors, business men and women. The faculty members received pay proportionate to registration in their classes. Registration in some courses promptly reached the maximum that could be accommodated. In others, eminent and scholarly faculty men lectured to pitiably small groups of complacent students. A study was made. A lonesome, scholarly man complained bitterly of the low ebb of appreciation of his subject but continued to discourse learnedly about matters within his field. He worried about "snap courses" in which large numbers were registered. The students' fees were paid from their own earnings, there being no parental funds and no free scholarships available. The students reported favorably about the instructors whose courses helped them better to carry on their daily work. Enlightenment was appreciated when it enlightened, that is, when the vital tasks of the day and extending knowledge became parts of a coordinated whole, when scholarship and realities developed together. Thus an astronomer's classes were always filled because distant astronomical facts became near through mathematics, venturesome imagination, and a strong footing upon an ever-rolling earth. Literature, languages, history, science, psychology and philosophy were adjusted, the instructors said, to the needs of professionally engaged people. The instructors learned. Their classes grew. Their pay increased. The students were enthusiastic. One instructor remarked: "This is my happiest teaching, but the head of my university department might not like what I am doing." That was thirty years ago.

The adult education movement is general recognition that education does not cease. At one extreme we strive to remove illiteracy even though some illiterates are satisfied with their

state. At the other extreme are our superior educated people. All those from one extreme to the other are helped to "keep carrying on." It is wrong to imply or to infer that only those who have not had schooling are the educational, social or economic illiterates, or that those of most schooling are always our superior educated people. Dr. John M. Coulter often warned his graduate students regarding "still-born doctors of philosophy." In America we now approach a condition in which continued education is possible from cradle to grave for all who wish it.

It is partly this educational opportunity that has drawn so many people from other countries to America. That was partly what motivated the early settlers and the "Founding Fathers." Educational opportunity is partly what this war is about. It is a very large part of the after-war program not only for the democracies but for other nations in which the common good of all men must be more adequately considered. It is highly significant that the two sides in the war are often designated as the "axis powers" and the "democracies" though "allies" may seem a more appropriate term. "Axis" is geographic. It is physical and regional. It is a central or hinging material support about which there may be organized areas that are ad-axial or dependent. There is a definite program of education in each of the axis countries, but it is to train people to do those things needed directly to maintain the fatherland and its rulers. It isn't for the direct benefit of individuals, but to train individuals to become parts of those forces and workers which make up the government. Individual aspirations and ideals are submerged. "Democracies" implies ideals. The name refers to how people live and work together. It means an assemblage of peoples who care about individuals and who are committed to the common welfare of all. The so-called democracies fight together to maintain what we hope will be the privilege of having nations live together for their common good. It is better for men to die fighting for freedom of opportunity than to live without such freedom. Those who die for freedom of opportunity help in a tragic way to buy that freedom for others. The race's development of freedom for individuals has been marked all along its history by immortal monuments created by those who could not be subdued into the slavery of "axis powers."

We must do more careful thinking about the meaning of educational opportunity for all individuals. We have no delusions about successes and failures of our own system of democratic education. Patterned after programs designed to serve those who sought specialized professions, we have offered to all this program made for small numbers and have continued that program after huge numbers began to participate. It is even doubted that our program was best for those expecting to engage in the professions, since those persons as well as others need some understanding of the foundations, knowledge, and to some extent the skills which relate to many aspects of human life. If we are to understand one another, we shall need to know more about the interests and activities of the major social, professional, and industrial groups. Even more shall we need practical working belief in certain indispensable qualities of character and behavior without which increased learning may be the worse for us. Free universal education must carry responsibilities commensurate with its privileges. Therefore, when we hear the abundant talk nowadays about ways for guiding other peoples in their proposed educational plans, let us be honestly and intelligently aware of our own further needs. We can not yet claim to have educated individuals so that their own best interests are always served while producing citizens who devotedly serve their country's needs.—Otis W. Caldwell, General Secretary, A. A. A. S.

Paper Quotas and Association Dues

This most complicated of all wars is bringing home to everybody the fact that all human beings and all the interests of each human being are interrelated. As an illustration of the latter, it now develops that the present acute shortage of paper and the prompt payment of dues by members must be considered together by the officers of the Association. The relationship between the production of such paper as that on which these words are printed and the payment of membership dues arises as follows:

The War Production Board has established quotas of paper that may be used during the calendar year 1944 in the publishing of such magazines as the A.A.A.S. Bulletin and *The Scientific Monthly*. The quota of paper for each such journal for 1944 is 10 per cent less, by weight, than the amount that was used during the calendar year 1942. A complicating factor in the case of these journals is that the circulation of each of them has increased by more than twelve percent in the interval. Without discussing how the required reduction in the use of paper may be effected, the relationship between the scarcity of paper and the payment of dues will be explained.

On last October 1 the new fiscal year began and the dues for 1944 became payable. The subscriptions for the journals, however, are for the calendar year 1944. Hence no question arises until the first of the year. Suppose that on January 1 three thousand members through carelessness or for any other reason have neglected to pay their dues for the fiscal year that began on October 1. The question at once arises whether copies of the January issues of the journals should be printed for them with the expectation that they will make up their arrears. Heretofore copies of the journals have been printed and held in reserve so that when delinquent members pay their dues back copies may be sent to them.

In view of the increase in subscribers for both journals and the necessity of reducing the consumption of paper, the extra copies this year will be kept somewhat lower than heretofore, with the possibility that some members who pay their dues very late may not be able to obtain all back numbers. Printing of the January number of *The Scientific Monthly* will begin about December 15. After that date the chances that members whose due are in arrears will be able to receive all back numbers will steadily decrease.

Paper Shortage and Publications

In this land of erstwhile plenty there are now shortages of man power and woman power, of doctors and teachers, of food and fuel, of housing and clothing, of transportation and hotels, of theaters and hospitals, of rubber and paper. Apparently only the capacity of the circumambient ether to carry radio waves remains unimpaired by the war.

By an order of the War Production Board, magazines may use in the calendar year 1944 only 90 percent, by weight, of the paper they used in 1942. Therefore *The Scientific Monthly* must reduce its paper requirements during the coming year by at least 10 percent below the amount used two years ago. The situation would not be so difficult to meet if the number of subscribers for the *Monthly* had not considerably increased in the interval.

There are, of course, several possible ways of reducing the paper used by a magazine—by omitting an issue or two, by reducing the number of pages, by reducing the size of the pages or by using paper of lighter weight. The first three methods reduce the reading matter provided for the subscribers; the last detracts from the physical quality of the journal. There are, however, methods of avoiding these solutions. Instead of making changes that will be to the disadvantage of the reader, more words may be put on a page by using smaller type or more and longer lines on a page may be used. Many publications are using both smaller type and larger type pages.

Heretofore each issue of *The Scientific Monthly* has normally consisted of 96 pages of text and illustrations and eight pages of fore material and advertising. Half of the 96 pages and all of the eight pages have been on coated stock, suitable for carrying halftone illustrations. The remainder has been printed on a somewhat lighter unglazed paper. Exclusive of the cover, there have been 56 pages of coated stock and 48 of unglazed paper.

Beginning with the January issue of the *Monthly*, the normal column length will be 53 lines instead of 49 and the lines will be half an inch longer, resulting in slightly narrower margins. Nevertheless the pages will continue to be attractive and, in the new format, 80 of them will carry almost exactly as much type as 96 of those formerly used. There will be 8 pages of fore material, biographical sketches of authors and advertising, and 4 pages of advertising in the back, a total of 92, exclusive of the cover, instead of 104 as heretofore. Of the 92 pages, 48 will be on coated stock instead of 56 as in the old format. These changes would produce a little more than the necessary reduction in paper during 1944 if the number of subscribers had not increased. If the restrictions on the use of paper continue, additional economies may have to be made in the latter part of the year.

Plans for Future Scientific Meetings

In order to explore the possibilities of holding scientific meetings during the remainder of the war period and to make tentative plans for the first meeting of the Association after the war, two conferences were held a few weeks ago with the secretaries of the sections of the Association and of the principal affiliated societies. The secretaries living in the eastern part of the country were invited to meet in New York for a conference to extend over parts of two days. In spite of very heavy demands on the time of every one invited, the attendance was 17. A week later a similar conference was held in Chicago with an attendance of 22.

Among the many questions that were discussed was that of holding regional or local meetings during the period in which travel is restricted by the demands on transportation systems due

to the war. Regional meetings were understood to be limited not only geographically, but also usually in range of sciences represented. An illustration of one extreme of regional meetings is the symposium on Biomechanics that was presented in New York on November 3 under the joint auspices of the Section on Engineering of the Association and the Biomechanics Committee of the American Society of Mechanical Engineers. The other extreme would be a geographically limited meeting at which many fields of science would participate.

At the New York conference the sentiment was unanimous against the holding of a large national meeting during the war and a resolution was passed favoring the holding of regional and local meetings. At the Chicago conference, however, the holding of regional meetings did not receive much support. Instead, the secretaries of the biological sections and societies prepared a resolution favoring the holding of a national meeting of biologists under the sponsorship of the Association, subject to limitations of travel. The possibilities of sectional and local meetings will continue to be explored, with the expectation that their desirability will vary widely from science to science and with local conditions.

The suggestion that the central theme of the first general meeting of the Association and its affiliated societies after the close of the war be the progress of science during the war period was received with approval at both conferences. Under this plan the various sections and societies would present symposia on the advances made in their respective fields, recording the extent to which scientific discoveries were forced or stimulated by war problems and forecasting their probable usefulness in the future. The Association might publish such surveys of the progress of science during what has been perhaps its greatest period. Unfortunately corresponding records were not made of the advancements of science during the first World War.

Those attending the conferences did not have the power to make final decisions for their respective societies, but they did have the power to appreciate more fully the solidarity of all science, to perceive the great advantages of cooperation among scientists in various fields and to vision the role of science in the evolution of society. The influence of these conferences will be felt in the meetings that may follow, and the hope was often expressed that similar conferences will be held annually in the future as boards of strategy for organizing and directing the most potent forces that are transforming the world.

Man's Food: Its Rhyme or Reason

Dr. Mark Graubard, of the U. S. Department of Agriculture, has written and The Macmillan Company has published another book in the Association's Nontechnical Science Series. As the first part of the title implies, the subject is broad, not in a statistical sense but in the sweep and balance with which human nutrition is treated. As the last part of the title implies, the approach to human nutrition is wholly novel. Drawing deeply on his observations of habits of eating in several continents and countries and on what the remains of primitive peoples and the literature of all ages reveal regarding man's food, the author leads his readers along paths of wisdom by letting them laugh and gasp at the food of other times and places, and by occasionally showing them their own somewhat similar foibles and follies in the light of scientific knowledge about nutrition.

5¾ × 8½, 213 pp., 1943. List price $2.50; to members of the Association ordered from the Association, $2.

The January Scientific Monthly

In the next issue of *The Scientific Monthly*, the Assistant Director of Rubber, a professor in the Massachusetts Institute of Technology, presents an authoritative and clear picture of the synthetic rubber situation, both as to its near future and as to its long-term prospects. A member of the staff of the Pan American Union, in an illustrated article, raises the question whether the Amazon has been fully discovered. An illustrated paper on agar, a seaweed product of great importance in biology, is presented by a Chinese scientist from the Scripps Institute of Oceanography.

Another tone is struck in a nontechnical description of electric waves of all lengths by a scientist from the Bell Telephone Laboratories. The tone changes again when a Commander of the United States Naval Medical School discusses the scope and status of tropical medicine, a subject of very great importance now that our armed forces are operating in almost every longitude of the tropics. At this place a deep diapason enters as one of the foremost mathematicians of our time, and a former president of the Association, sounds the rich chords of the Newtonian and other forms of gravitational theory.

Lest the reader should forget that science is interested in man, as well as in the rest of the

world, a Philadelphian discusses the origins of American negroes and their ethnic compositions, while a botanist of Harvard presents a paper on population problems of a new world order. Although the coming number of the *Monthly* does not begin with the always timely topic of weather, it closes with an article on sunshine and cloudiness in the United States which will be pleasant reading in cold winter evenings. All this is followed by examples of science on the march and by book reviews.

Table of Contents

Synthetic Rubber ..... E. R. GILLILAND
The Amazon—Has It Been Discovered ..... A. F. KUNZE
Agar: A Valuable Seaweed Product ..... C. K. TSENG
Electric Waves—Long and Short ..... J. O. PERRINE
Tropical Medicine: Its Scope and Present Status ..... E. N. HUDSON
Newtonian and Other Forms of Gravitational Theory ..... GEORGE D. BIRKHOFF
The African Origin of the American Negro and His Ethnic Composition ..... M. F. ASHLEY MONTAGU
Population Problems of a New World Order ..... KARL SAX
Sunshine and Cloudiness in the United States ..... STEPHEN S. VISHER
Science on the March
Book Reviews

Election of President of the Association

Last year for the first time in the history of the Association the Council elected the president by mail ballot as a consequence of the cancellation of the annual meeting that was scheduled to be held in New York during the Christmas holiday season. Since conditions are still such that it is not possible to hold a great meeting of the Association, the Executive Committee directed the Office of the Permanent Secretary to conduct again mail ballot of the Council for the president and other officers.

At present the Council of the Association consists of 255 members, of whom 52 are elected by the Association, 168 by independent affiliated societies, and 35 by affiliated academies of science. The Council members elected by the Association and by the affiliated academies of science may be from any field of the natural or social sciences. But the interests of representatives of the affiliated societies naturally are well distributed among the sciences. At present their distribution over the sciences is as follows: mathematics, 11; physics, 16; chemistry, 14; astronomy, 8; geology and geography, 21; zoological sciences, 40; botanical sciences, 36; anthropology, 5; psychology, 13; social and economic sciences, 7; historical and philological sciences, 5; engineering, 21; medical sciences, 38; agriculture, 10; and education, 10.

The first step in the election of a president of the Association is a nomination mail ballot by the Council in August of each year. The names of the 15 to 20 persons receiving considerable numbers of votes on the nomination mail ballot by the Council are sent to every member of the Association on October with an invitation to cast his preference ballot for president for any one of the listed nominees or for any other fellow of the Association. This year 6,228 preference ballots were cast by the general membership of the Association. The first 16 men in order of ballots received, with their names arranged by lot, are as follows:

General Membership Ballot

Name	*Field and institution*	*Preference ballot*
Merrill, E. D.	(botany; Harvard)	206
Daly, R. A.	(geology; Harvard)	77
Ogburn, W. F.	(sociology; Chicago)	147
Mendenhall, W. C.	(geology; U. S. Geol. Surv.)	228
Harrison, R. G.	(zoology; Yale)	242
Conant, James B.	(chemistry; Harvard)	906
Wickenden, W. E.	(engineering; Case)	323
Woodworth, R. S.	(psychology; Columbia)	264
Carlson, A. J.	(physiology; Chicago)	853
Richards, A. N.	(pharmacology; U. of Pa.)	303
Hektoen, Ludwig	(pathology; Chicago)	316
Lillie, F. R.	(zoology; Chicago)	334
Shapley, Harlow	(astronomy; Harvard)	872
Sherman, H. C.	(chemistry; Columbia)	328
Wissler, Clark	(anthropology; Am. Museum)	160
Adams, Roger	(chemistry; Illinois)	378
Scattered		291
Total preference ballots		6,228

The foregoing table of ballots by members of the Association was sent to the Council for their information when casting their ballots for president and other officers. As these words are written the Council are sending in their ballots. It is expected that their vote will be completed before this issue of the BULLETIN is printed. Consequently, the following table will be set up, except for the results of the ballot, and the results of the Council vote will be entered in the proofs so that all members of the Association may see to what extent the Council agrees with the preferences they have expressed.

First Council Ballot for President

Name	*Votes*	*Name*	*Votes*
Merrill	5	Carlson	44
Daly	3	Richards	3
Ogburn	3	Hektoen	5
Mendenhall	3	Lillie	7
Harrison	11	Shapley	41
Conant	45	Sherman	4
Wickenden	5	Wissler	6
Woodworth	4	Adams	4

Since it is not likely that any person will receive on the first ballot a majority of all votes cast by the Council, a second ballot will probably be required. It will not be difficult to take a second vote by the Council, but a second and possibly a third ballot by the entire membership would be prohibitively costly.

Companions in Zealous Research

Aside from the academies of science, most of the societies affiliated with the Association were organized to advance the interests of special fields of science. There is, however, one notable exception, The Society of the Sigma Xi, or in English, The Society of Companions in Zealous Research. The name itself gives the key to its point of view. It emphasizes research as a mode of life, warmed and enriched by human companionship. In 88 centers in the United States, it extends its hands in welcome to the young scientist and maintains its interest in him throughout his life.—F.R.M.

In 1886 at Cornell University was born The Society of the Sigma Xi. It had a dual origin, partly in the mind of Henry S. Williams and partly from discussions between engineers, students and faculty alike. Fortunately, those who had the thought of an organization for promoting science in our universities were much more concerned with the object than they were with personal ambitions and these two movements soon fused into one. Naturally, Williams, the man who had given so much thought to the welfare of science students, took a leading part in future developments and became a national President. Growth of the Society was very slow at first; at the time of the first national convention in 1893 there were only four active chapters. Of these, three were in New York State and one was in Kansas. Two years later, at the second convention, there was but another addition, Yale, but this had come on its own initiative and has been a source of strength ever since. At the 15th anniversary of the Society there were 11 chapters, at the 20th there were 21, and at the end of the quarter century there were 28. Thus in the first 25 years of its existence, by careful consideration and effort, Sigma Xi had laid a firm foundation for future growth. During all this time the conscious effort was to build for the future, and so for many years the increase in chapters was slow. Now, with a half century of achievements behind it, the Society feels free to go into any institution where its presence could promote scientific investigation.

The unit of Sigma Xi is the chapter. This is a group of research workers in scientific subjects connected usually with some college or university—members of the faculty or staff to which are annually added students in residence. As soon as a member loses active connection with his chapter he becomes an unaffiliated member. The method of establishing a chapter is for a group of former members at an institution to send a petition to the President, who then refers it to the Executive Committee, requesting the formation of a new chapter and giving information regarding members on the faculty, the research productivity of the staff, the attitude of the administration toward research, and the financial and practical backing afforded scientific investigation at the institution. A visitation committee is then sent to the school to see at first hand the conditions surrounding research. It may be that the Executive Committee will think it wise for the group to form a Sigma Xi Club and to prove its devotion to research by a period of activity in this way. If, however, it is convinced that the petitioners form an experienced and well-supported group, they may pass favorably on the petition and recommend it to the convention where a vote of three-fourths is sufficient to grant the charter. If this is secured, it then only remains to install the chapter, which is done by the national officers or by their representatives.

When a charter is granted and a chapter is installed it is ready for operation as one of the integrated members of the group. Thereafter it holds a regular series of meetings, quarterly or monthly, throughout the year. In some chapters regular meetings are held in different departments of the institution until all have been visited and their work has become known. They bring speakers to the school, either singly or in cooperative groups of a particular region. This has been a practical matter which finally resulted in the establishment of the National Lectureship Committee whose business it is to secure a group of five outstanding scientists as speakers each year and to arrange their itineraries. Finally the series of lectures are published and distributed.

The meetings of the Society are unusually well attended and, in many schools, are preceded by a dinner. They form a means by which scientists in the institution get together for understanding of, and cooperation in, scientific research. If advantage is taken of the opportunity, they enable students to become acquainted with the instructors in a way that would be difficult otherwise. Some chapters represent a full measure of the opportunity which such an organization provides, while others show varying degrees of approach to this end. But no matter how inefficient they may be, at the meeting when the initiates are taken into membership, science is presented as a whole, as a field and a method of study, contrasted with other forms of mental discipline which enter into the curricula. There are now 88 chapters and 41 clubs, a few of the latter being located in foreign countries.

Membership in the Society has now become so extensive that if all who have been elected are counted, it is the largest scientific group in existence. A movement to make those no longer connected with their universities active in the affairs of the Society has been persistently developed. The purpose here is to make it clear that once a member, always a member.

Unaffiliated membership on the Executive Committee, contributions to the Research Fund give reality to this assumption, which is further evidenced by a National Committee on Membership to look after the interests of those who are no longer connected with chapters.

But the largest list of active members is that connected with chapters, for this is where new members come from and this is largely the source of the operations of the Society. First in order of election may be that of associate member. This is a grade which has not been utilized by all of the chapters, but it serves a very useful purpose in many schools to record progress without committing the Society to full membership. In the smaller schools, where teachers know their students fairly well, associate membership makes possible the early encouragement of possible research material. Later the associate can be elected to full membership, as they are in schools where this is the beginning step. To see that associates are not forgotten, it is provided that they shall be reviewed annually in search of those who have made good, and to further safeguard their election they may ask for consideration. If they retain contact with an institution where there is a chapter, they remain active members; if they depart from such connections, they become unaffiliated members with connection through the National Committee on Membership, except that in case a club is formed they become club members.

The publications of the Society are the *American Scientist*, the former Sigma Xi Quarterly, which serves as a means of communication and record of the Society's business, and as a place of publication of lectures and other important contributions. The former function was largely served in the early days, but gradually the latter one is coming into prominence, hence the change in name. The Quarterly is issued four times a year with a distribution at present of 27,500 copies. It is now in its 31st volume.

Besides this journal, the Society has also published two volumes in commemoration of the 25th and 50th anniversaries. The quarter century volume was edited by the National Secretary, H. B. Ward of the University of Illinois, and gave a history of the Society up to that time. The semicentennial volume was similarly prepared by the National Secretary, Dean Edward Ellery of Union College, and published in 1936.

Also there have been issued three volumes of the national lectures given before the chapter during the past six years. These volumes, *Science in Progress, I, II, III*, mirror the progress of science and thus serve an excellent purpose. For twenty years it has been the custom of the Society to furnish an evening lecture at the Christmas meeting of the American Association for the Advancement of Science; always an outstanding event in the program of the Association.

Thus, taken altogether, The Society of the Sigma Xi is seen to have assumed a commanding place in the development of science in our institutions and must always be reckoned with in their future development.—C. E. McCLUNG.

Contents of Volume II (1943)

January

A Decade of Resolutions, 1932–1941 1
State Academies and District Meetings 2
Southern Association of Science and Industry 3
A Community Helps Itself 4
Affiliated Academy Research Grants 5
A Who's Who of American Scientists 6
Financial Reports, Fiscal Year 1941–42 7
Dutch Scientists in Japan 7
Aerobiology 8

February

The Immediate Future of the Association 9
Resolutions 10
An Example of Initiative in Education 11
A Who's Who of American Scientists 12
The Association from 1881 to 1890 12
AAAS-Gibson Island Research Conferences, 1943 13
An Award for Research on Alcoholism 14
Vice Presidents of the Association 14
Liebig and After Liebig 15
Contents of Volume I, 1942 15

March

Knowledge and Wisdom 17
Votes of the Council for President 18
Officers of the Association for 1943 19
New Section Committeemen 20
The Lancaster Branch 21
Association Honorary Members 21
Announcement of the Hooker Scientific Library 22
Foundation for the Study of Cycles 23
Recent Deaths of Members 23

April

Laws of Nature and Laws of Man 25
Isaiah Bowman, President of the Association 26
Interrelations Among Scientists of the Western Hemisphere, Resolution 27
More about "Knowledge and Wisdom" 28
The Theobald Smith Award for 1943 28
The American Chemical Society 29
Changes in Mailing Addresses 31
Vice President for Section M 31
A New Publication—Chemical Control of Insects 31
The Genetics of Pathogenic Organisms 32

May

Science in Social Conditions 33
Another Serious Shortage 33
Science Mobilization Bill (S. 702; H.R. 2100) 34
AAAS-Gibson Island Research Conferences 34
Resolution, Support of U. S. War Efforts 35
American Mathematical Society 36
American Anthropological Association 38
The Association from 1891 to 1900 39

June

Science in the Future 41
Generous Responses 42
Interrelations Among Scientists in Western Hemisphere—Revised Resolution 42
Geological Society of America 43
Entomological Society of America 44
Interrelations Among Scientists of the Western Hemisphere by J. H. Steward 45
Booklet for Latin American Biologists 46
Status of Membership 46

Members of Longest Continuous Membership 46
Publication of Symposia on Entomology 47
Notice of Change of Address 48

July

"American" 49
Science Shapes the Future 50
Interrelations Among Scientists of Western Hemisphere—Resolution in Spanish and Portuguese 51
National Academy of Sciences 52
The Near Future of the Association 54
American Institute of Electrical Engineers 54
Association Membership in Latin America 56

August

Liberty, Equality, Fraternity, I 57
"The Older Worker" 58
Science Mobilization Bill (S. 702) 58
Question of Scientific Meetings 59
Finances of the Association 60
Support of U. S. War Efforts, Revised Resolution 61
Botanical Society of America 61
American Phytopathological Society 62
Surface Chemistry 64

September

William Lyon Phelps 65
Resolutions by the Association 66
Nominations for President 67
Astronomy in War Time 67
Appointment of Director of Publications 68
Proposed Reproduction of Sylloge Fungorum 68
New Fiscal Year and Dues 68
October Scientific Monthly 69
1943 AAAS-Gibson Island Research Conferences 69
American Society of Mechanical Engineers 69

October

Liberty, Equality, Fraternity, II 71
National Research Council, 1917–1941 74
November Scientific Monthly 75
A Year of Relative Ease 76
American Astronomical Society 77
American Psychological Association 78
Membership Status 79

November

Objectives, Methods, Principles 81
Science and the Citizen 82
Local Meetings of the Horticulturists 83
December Scientific Monthly 83
An Interesting Phenomenon 84
What Becomes of Them 84
Surface Chemistry 85
Pacific Division Meetings Suspended 85
Association Symposia Publications 85
American Society for Horticultural Science 86
Association of American Geographers 87

December

Post-War Education—I. Where Are We Now? 89
Paper Quotas and Association Dues 90
Paper Shortage and Publications 91
Plans for Future Scientific Meetings 91
Man's Food: Its Rhyme or Reason 92
January Scientific Monthly 92
Election of President 93
The Society of the Sigma Xi 94
Contents of Volume II, 1943 95

Officers of the Association

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Executive Committee: Burton E. Livingston, *Chairman;* Roger Adams, Joseph W. Barker, Isaiah Bowman, Otis W. Caldwell, Walter B. Cannon, J. McKeen Cattell, Roy E. Clausen, Kirtley F. Mather, F. R. Moulton, and W. E. Wrather.

Membership in the Association

According to the Constitution, the objects of the Association are to promote intercourse among those who are cultivating science in different parts of America, to cooperate with other scientific societies and institutions, to give a stronger and more general impulse and more systematic direction to scientific research, and to procure for the labors of scientific men increased facilities and a wider usefulness. Members may reside in any country. A person desiring to become a member of the Association should fill in a membership application card that may be obtained from the Office of the Permanent Secretary and return it with his payment of $5.00 for one year's dues. Every member in good standing receives with his membership a subscription for either *Science* or *The Scientific Monthly.* Dues are for the fiscal year that begins October 1; the subscription begins the following calendar year. A member desiring to receive both journals concurrently may do so by paying $3.00 in addition to the regular dues. Members in good standing receive also, without extra charge, subscriptions for the A.A.A.S. BULLETIN, and they may purchase symposia publications at prepublication prices, and after publication at special prices to members.

A person who pays $100 in one fiscal year may be elected a life member; sustaining members pay $1,000. Both classes are exempt from the payment of further dues but are entitled to all the privileges of membership.

An incorporated scientific society or institution or a public or incorporated library may become a member by paying the entrance fee of $5.00 in addition to the dues. Such institution members are entitled to the same privileges as individual members.

Members are encouraged to nominate for membership persons who desire to cooperate in carrying out the objects of the Association. Names may be sent to the Office of the Permanent Secretary at any time. In the letter of invitation to become a member of the Association the name of the person making the nomination is ordinarily mentioned.

Changes of Address

New addresses for the Association's record and for mailing the journals *Science* and *The Scientific Monthy,* as well as the A.A.A.S. BULLETIN, should be in the Office of the Permanent Secretary, Washington 25, D. C., at least two weeks in advance of the date when the change is to become effective.